

METHOD AND WIRELESS TRANSCEIVER FOR REQUESTING AND
PROCESSING INFORMATIONField of the Invention

The present invention relates to a method and wireless transceiver for requesting and processing information.

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Background Information

PCT Published Patent Application WO 98/26395 describes a method for traffic information in which data is transmitted upon request and/or automatically between a central unit and a mobile subscriber unit, and in which the data contains traffic information which is output upon request and/or automatically by the mobile subscriber unit to the subscriber.

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Summary of the Invention

The method according to the present invention provides that information queries transmitted by a wireless transceiver to a service provider and the information returned by the service provider are provided with predefined validity time values. Thus, the maximum time period for obtaining information can be calculated even when no data selection connection or the like is possible or convenient.

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In embodiments of the present invention, the information queries are transmitted as short messages over a wireless network, for example, a mobile wireless network, and the information queries are provided with a first validity time value. When the validity time value is exceeded but

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the information query has not yet been transmitted to the service provider, the information query is automatically deleted in the wireless network and thus it cannot initiate any information to be returned by the service provider. This contributes to simplified error processing of the method according to the present invention and in a simplified design of the wireless transceiver according to the present invention. Furthermore, the returned information is also received in the form of short messages, SMS messages in accordance with the GSM standard in particular, the returned information being provided with a second validity time value by the service provider which also contributes to simplified error processing, in particular in the case of communication disturbances.

In further embodiments of the present invention, the wireless transceiver includes means for determining its position, in particular in a road network. Thus, information queries can be requested depending on the position of the wireless transceiver.

In further embodiments of the present invention, the information queries are generated on the basis of the position of the wireless transceiver. Thus, obtaining information is simplified, for example, reducing the amount of information to be transmitted.

In further embodiments of the present invention, a message is generated in the wireless transceiver and/or the use of the information returned by the central station to the wireless transceiver is suppressed if a first predefined time period has been exceeded after the first information query has been transmitted. This makes it possible to respond to the fact that information was received with a delay, for example, by calling a user's attention to this fact and/or by ignoring the returned

information, for example, if this information has become
obsolete and therefore no longer relevant due to a long
time delay in the transmission of information for
processing, for example, for the navigation of a motor
5 vehicle.

In further embodiments of the present invention, after a
first information query, a second subsequent information
query is automatically transmitted after a second
10 predefined time period has been exceeded, the second
predefined time period being started at the time of the
first information query, the first predefined time period
which causes the returned information to be suppressed
after it has been exceeded being restarted at the time of
15 the second information query, and the second predefined
time period being greater than the first predefined time
period. This makes it possible to send out information
queries repeatedly and to keep the information
processing, for example, for calculating the most
20 favorable route of a vehicle in the presence of traffic
problems on certain road segments, permanently up-to-date
through the returned information. Furthermore, by using
automatic information queries, it is also possible to
keep the processed information constantly up-to-date
25 without user intervention, resulting in a higher degree
of operating reliability of the method according to the
present invention and the wireless transceiver according
to the present invention for requesting and processing
information, in particular when the user is performing
30 some activity, for example, driving a vehicle.

In further embodiments of the present invention, a second
information query following the first information query
in time is transmitted upon user request, the first
35 predefined time period being restarted at the time the
second information query is issued. Thus, an information
query can be sent upon user request, which may be

desirable in the event of unexpected changes in the situation, for example, a change in destination. In addition, the number of information queries in the case of an information query upon user request can be kept
5 lower and information queries can be transmitted in a controlled manner, for example, before a decision to be made, in particular regarding road conditions, resulting in reduced telecommunications traffic and reduced costs when the information queries are associated with costs.

10 In further embodiments of the present invention, the returned information contains traffic situation reports, in particular according to the TMC standard, and the traffic situation reports may relate to one or more
15 specific areas. Thus, only those traffic situation reports are taken into consideration in the wireless transceiver which, for example, are or may become relevant for the navigation to be performed, since they concern areas which correspond to areas queried in the
20 information query or are adjacent thereto, for example.

In further embodiments of the present invention, the life of the traffic situation reports exceeds a predefined minimum life. The traffic situation reports contained in
25 the returned information are therefore received in all cases.

In further embodiments of the present invention, the predefined minimum life of the traffic situation reports
30 is greater than the sum of the predefined first time period and the predefined second time period. Traffic situation reports contained in returned information can thus not be ignored because of their excessively short life alone during information processing. Thus, no short-
35 term loss of traffic situation reports occurs in the wireless transceiver in the case of a time spread in obtaining the messages.

5 In further embodiments of the present invention, a number of appropriate and relevant traffic situation reports is selected from the amount of traffic situation reports received, and is made available to a processing unit, in particular a navigation unit. This can reduce the processing costs by concentrating on the relevant traffic situation reports, making processing speedier, allowing the hardware and the software to be kept simpler, thus reducing costs.

10 In further embodiments of the present invention, a wireless transceiver includes a memory in which received traffic situation reports can be stored. Thus, the traffic situation reports can be read individually from returned information. The traffic situation reports can be used without all the returned information being fully available in the case of a plurality of returned information items received by the wireless transceiver. The method according to the present invention and the wireless transceiver according to the present invention are compatible with receiving traffic situation reports via a unidirectional communication channel, for example, via radio, broadcast SMS, or the like. Furthermore, traffic situation reports can thus be used in a practical manner when the respective returned information is not fully available

20 In further embodiments of the present invention, the wireless transceiver includes means for selecting navigation messages from the traffic situation reports and for making them available to a navigation unit. This reduces the resources needed in the navigation unit.

Brief Description of the Drawings

30 Figure 1 shows a block diagram of a wireless transceiver embodiment according to the present invention;

Figure 2 shows a transmit/receive diagram according to an embodiment of the method according to the present invention and the mode of operation of the wireless transceiver according to the present invention between the wireless transceiver, a wireless network, and a service provider; and

Figure 3 shows a transmit/receive diagram according to a present invention and the mode of operation of the wireless transceiver according to the present invention between the wireless transceiver, a wireless network, and a service provider.

Detailed Description

Figure 1 shows a block diagram of a wireless transceiver 100. Wireless transceiver 100 includes a transceiver unit 110, which is connected to an analyzer circuit 120. Analyzer circuit 120 is connected to a distributor device 140. Furthermore, a memory 142, a navigation unit 160, playback devices 184, and input devices 182 are connected to distributor device 140. Navigation unit 160 is also connected to a navigation data memory 162. Transceiver unit 110 can be designed, in particular, so that it includes a receptacle for a portable telecommunications terminal, for example, a cell phone, so that transceiver unit 110 cannot be operated until the portable telecommunications terminal is connected to transceiver unit 110, for example, plugged in or the like. The different units and devices of wireless transceiver 100 can be distributed among different housings or integrated in a single housing. Individual units and devices of wireless transceiver 100 can be combined with an additional device in a housing. Thus, for example, input devices 182 and playback devices 184 can be integrated

into a wireless receiver. In this case, the wireless receiver is connected to wireless transceiver 100 via a wire-bound or wireless connection, for example, a CAN bus or the like. The wireless receiver is provided with a decoder for traffic situation reports, in particular, according to the RDS-TMC system, so that the traffic situation reports can be received by the wireless transceiver via the link between the wireless transceiver and the radio receiver.

Figure 2 shows the communication process over time according to an embodiment of the method according to the present invention and the mode of operation of wireless transceiver 100 according to the present invention between the wireless transceiver 100, a wireless network 50, and a service provider 10 with the aid of a transmit/receive diagram. A first information query 1000 is transmitted by wireless transceiver 100 to wireless network 50 to be forwarded to service provider 10. First information query 1000 is provided by wireless transceiver 100 with a first validity time value 1402. First validity time value 1402 causes first information query 1000 no longer to be able to be transmitted to service provider 10 after the lapse of first validity time value 1402. If first information query 1000 was not transmitted to service provider 10 over wireless network 50 during the time period of first validity time value 1402, first information query 1000 is lost.

When first information query 1000 has been successfully transmitted to service provider 10, service provider 10 processes the contents of first information query 1000 and, after a certain processing time, returns one or more items of information 1100 to wireless transceiver 100 over wireless network 50. Service provider 10 provides returned information 1100 with a second validity time value 1403, which specifies the time period during which

returned information 1100 is kept available in network 50 for transmission to wireless transceiver 100. If returned information 1100 is held available in wireless network 50 during a time period specified by second validity time value 1403 without returned information 1100 being transmitted to wireless transceiver 100, returned information 1100 is lost. If returned information 1100 is transmitted to wireless transceiver 100 within a time period specified by second validity time value 1403, wireless transceiver 100 can process returned information 1100. This takes place if first predefined time period 1401 has not been exceeded since the time when first information query 1000 was registered. If returned information 1100 was not received until after the lapse of first predefined time period 1401 after first information query 1000 was issued by wireless transceiver 100, a message is generated and/or processing of information 1100 which was returned too late is suppressed. The message can be forwarded in wireless transceiver 100 via distributor device 140 to playback devices 184 and output to a user there. The present invention further allows forwarding the message to navigation unit 160 or the like.

According to a method according to the present invention and wireless transceiver 100 according to the present invention, a second information query 1001 following first information query 1000 in time is transmitted by wireless transceiver 100 to service provider 10 over wireless network 50. Second information query 1001 can be issued due to a plurality of events, for example, automatically or also upon user request.

Second information query 1001 is transmitted automatically when a second predefined time period 1404 is exceeded. Second predefined time period 1404 is started at the time of first information query 1000.